Using equilibrium passive dosing to maintain stable exposure concentrations of triclosan in a 6-week toxicity test

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TU127 Using equilibrium passive dosing to maintain stable exposure concentrations of triclosan in a 6-week toxicity testA. Sobek, Applied Environmental Science ITM; A. Ribbenstedt, Stockholm University; L. Mustajärvi, Stockholm University / Applied Environmental Science ITM; M. Breitholtz, Inst för tillämpad miljövetenskap / Department of Applied Environmental Science ITM; P. Mayer, Technical University of Denmark / Department of Environmental Engineering. Aquatic organisms are constantly exposed to hydrophobic organic contaminants. Although these chemicals may be present at low concentrations, they can still cause negative long-term effects on organisms. In chemicals risk assessment, the majority of the ecotoxicological data is based on acute toxicity tests. Yet, the European Commission's criteria for chemicals' risk assessments aim at protecting higher levels in the environment. To achieve protection of populations and ecosystems, reliable long-term ecotoxicologial tests are needed. In this study, we used equilibrium passive dosing to maintain stable exposure concentrations of triclosan (log K_{ow} 4.8) in a 6-week multigeneration test with the benthic copepod *Nitocra spinipes*. The tests were performed in 10 mL vials casted with 1000 mg of silicone (DC 1-2577). Based on a previous pilot study, three triclosan concentrations were selected and tested (15 µg L^{-1}; 30 µg L^{-1}; 60 µg L^{-1}) as well as a control (no triclosan). At test beginning, each vial contained 12 individuals consisting of 3 individuals from four different life stages. The test includes feeding with phytoplankton three times a week, which can lead to declining freely dissolved triclosan concentrations. In the present study this was buffered by passive dosing. Water was exchanged every 7^{th} day by transferring the animals from the spend solution into a pre-equilibrated passive dosing glass. During the first two weeks, the copepods grow exponentially and can reach numbers of several hundred individuals in each vial. The increasing biomass of the test organisms can again lead to declining exposure concentrations, but such loss was buffered by passive dosing. Quality assurance tests showed that a) the loading and passive dosing procedures resulted in exposure concentrations with little variation (RSD 1-7 %), b) using two batches of passive dosing vials helped to maintain stable exposure concentrations, and c) the concentration of triclosan could be maintained throughout the whole 6-week test period. This study demonstrates that passive dosing offers a way forward to generate reliable and relevant toxicity data also from long-term studies with hydrophobic contaminants. The results on long-term toxicity of triclosan on *Nitocra* will be evaluated and discussed in relation to existing toxicity data from literature.